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## **The Beacon Caresystem**

*A system providing advice for mechanical ventilation*

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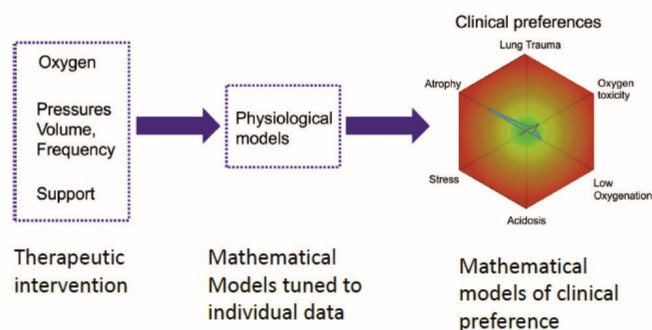
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# The Beacon Caresystem - A system providing advice for mechanical ventilation

## The idea and research

Critically ill patients require support of breathing using mechanical ventilation.

Innapropriate settings e.g. oxygen, pressure, volume and breathing rate can be dangerous



Mathematical models of the physiology can be tuned to individual patient measurements, allowing patient specific predictions. Preference functions formulated from decision theory, are used to describe the negative effects of ventilation, and advice generated to maximize preference and hence optimise mechanical ventilation.

A research system, INVENT, was built to advise on correct settings, minimizing the damage of mechanical ventilation for the individual patient.

## Commercial collaboration

In 2013 research was transferred into a commercial product - The Beacon Caresystem, produced by Mermaid Care A/S



Implemented as a tablet mounted on the ventilator it integrates patient data and provides advice on all ventilator settings. Collaboration continued between the rcare group at AAU and Mermaid Care resulting in clinical studies illustrating the safety and efficacy of the system

An Open-Loop, Physiologic Model-Based Decision Support System Can Provide Appropriate Ventilator Settings

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An open-loop, physiological model based decision support system can reduce pressure support while acting to preserve respiratory muscle function

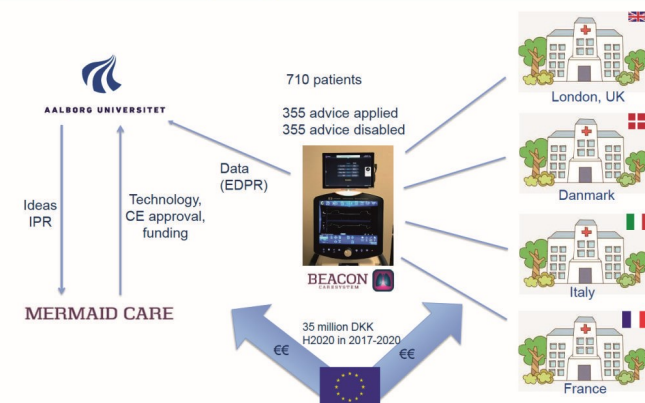
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## Large Scale Trials

In 2017/18 large scale randomised control trials began with the system used in 10 hospitals worldwide, and the system advising on settings during the many days of mechanical ventilation.



Studies are funded with two large H2020 grants amounting to 35 million DKK.

Studies are ongoing with scientific and commercial collaboration. Each clinical site requires >100 nurses trained in the system to respond to and understand advice.

In London the work was recently promoted by a BBC television report.

